Sam Laing

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Personal Statement

I am pursuing a Master's degreee in machine learning at the University of Tuebingen. I hold a bachelors degree in Mathematics from Trinity College Dublin. My background in mathematics equips me with a rigorous analytical approach, which I actively apply in my role as a part-time Machine Learning Engineer at a prominent Irish financial software company. In my professional role, I contribute to data-driven solutions and model deployment within the financial sector, gaining hands-on experience that complements my academic pursuits. I am passionate about leveraging advanced machine learning techniques to solve complex, real-world problems, and I am eager to continue expanding my technical skills and industry knowledge as I advance in the field.

Skills

Languages: Python, C++, SQL, , R, LaTeX, Prolog,

Technologies: PyTorch, JAX, Pandas, FastAPI, Azure, SLURM, GraphX, WandB, Numpy, Plotly, CUDA

Techniques:CNN, RNN, Transformers, XGBoost, Random Forrest Models, Hypothesis Testing, GLMs, Gaussian Processes, Markov Chains, Deep Q-learning, Imitation Learning, SNGP, DUQ

Experience

SoftCo Dublin, Ireland

Machine Learining Engineer *May 2023 – Present, Part-time*

Business Analyst Intern *May 2022 - September 2022*

- SoftCo develops Purchase to Pay (P2P) financial automation software. This involves matching invoice line level data with purchase order and associated logistics data. I joined a team to provide skills on machine learning and I built a Bayesian module to automate and increase the matching rates. I achieved in excess of 90% touchless processing. SoftCo was able to take customer raw data and prove they could deliver in excess of 90% auto match as part of the sales process. This had a positive impact on sales as SoftCo won a greater number of new customers at a higher invoice volume. The customer achieved significant cost savings as they only had to process the exceptions
- Developed and deployed a Random Forrest model for multi-label classification task with a large number of classes
- Developed a JSON file parser and contributed to the construction of an Azure data pipeline.
- Developed a number of forecasting models to predict customer activity and revenue
- Communicated frequently with Software Engineers through the Agile Scrum Framework
- Compiled supporting documentation on machine learning models

University Of Tuebingen Tuebingen, Germany

Research Intern *May 2024 - September 2024*

- Conducted research into the utility of soft label datasets for bulding better calibrated deep networks.
- In particular investigated their utility in comparison to using regularization techniques like MixUp, Manifold Mixup, CutMix and Dropout when using distance aware networks like SNGP, DUQ and Mahalanobis Distance.

Trinity College Dublin, Ireland

Bachelor's Thesis *Sep 2021 - May 2022*

- Wrote Bachelor's thesis under the supervision of Dr Jack Kelly in which I applied category theoretical techniques (in particular simplicial homotopy theory) to prove several fundamental theorems of algebraic topology.

Trinity College Dublin, Ireland

Undergraduate Researcher *Jun 2020 – Aug 2020*

- Conducted research into the Classification of Finite Rings using techniques in commutative algebra and category theory under the supervision of Professor Nicolas Mascot .

Trinity College Dublin, Ireland

Teaching Assistant *Sep 2021 – Dec 2021 and Sep 2022 - December 2022*

- Corrected assignments for the advanced Engineering Mathematics course offerred at Trinity College Dublin. The topics included Fourier Analysis, Partial Differential Equations and Linear Programming.

Education

University of Tuebingen Germany

MSc. in Machine Learning; ***Current Grade Average: 1.4 (equivalent 3.8 GPA USA)*** *Oct 2022 – Present*

Relevant coursework: Deep Learning, Statistical Machine Learning, Probabalistic Machine Learning, Trustworthy Machine learning, Time Series Analysis, Self Driving Cars, Massively Parallel Computing (CUDA Programming), Information Theory

Trinity College Dublin Ireland

BA Mathematics; ***First Class Honors (85% average)*** *Sep 2018 – Jun 2022*

Awards & Achievements

Trinity College Academic Gold Medal: Awarded to graduating students who achieved over a certain grade point avereage througout the four year degree.

Trinity College Entrance Exhibition Prize: Awarded to incoming students who achieved over certain points in the entrance examinations (CAO points)

William Hasslett Memorial Prize: Awarded to the St Andrew's College student with the best high school grades and attending Trinity College (in the Leaving Certificate Examinations) (2017)

University of California, Berkeley: Was awarded an academic scholarship to Berkeley for an exchange year. Was unable to attend due to the covid pandemic

Hobbies & Interests

Jazz Guitar & Piano, Olympic Weightlifitng, Road Cycling, Chess, 8-Ball Pool, Spikeball, Beach Volleyball

References

Susan Spence, Co-founder SoftCo & Manverton.
Email: susan.spence@manverton.com